Complete Summary

GUIDELINE TITLE

Intrapartum fetal heart rate management.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Intrapartum fetal heart rate management. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Oct. 27 p. [45 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Pregnancy
- Term and preterm labor
- Non-reassuring fetal heart rate in labor
- Fetal hypoxia and acidosis

GUIDELINE CATEGORY

Management
Risk Assessment

CLINICAL SPECIALTY

Family Practice
Obstetrics and Gynecology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To increase the use of methods that decrease potential adverse neonatal effects of persistent non-reassuring heart rate tracing in labor (e.g., decrease incidence of hypoxia and acidosis)
- To increase the use of remedial techniques that resolve temporary non-reassuring heart tracing in labor
- To achieve appropriate cesarean delivery rate for persistent non-reassuring heart rate tracing in labor

TARGET POPULATION

All pregnant patients, preterm and term, in active labor

INTERVENTIONS AND PRACTICES CONSIDERED

Risk Assessment

1. Assessment of labor risk
    - 20-minute fetal heart rate assessment
    - Patient assessment
    - Prenatal risk review
    - Risk in labor assessment
2. Nurse auscultory monitoring, using DeLee stethoscope or Doppler ultrasound device
3. Continuous electronic fetal monitoring: external or internal
4. Fetal scalp stimulation test
5. Vibroacoustic test
6. Fetal scalp sampling for pH
7. Fetal pulse oximetry
8. Obstetrical or surgical consultation/referral
9. Notify neonatology team

Management

1. Remedial techniques
    - Amnioinfusion for thick meconium, repetitive severe variable decelerations, prolonged decelerations, and/or oligohydramnios with continuous intrapartum monitoring
    - Changing maternal position to right/left side lying recumbent or knee-chest

- Intravenous (IV) infusion
- Mask oxygen
- Stopping oxytocics
- Subcutaneous terbutaline

2. Delivery
    - Vaginal delivery
        - Episiotomy
        - Vacuum or forceps extraction
    - Cesarean section
    - APGAR (American Pediatric Gross Assessment Record) test
    - Laboratory testing, including cord pH or blood gases

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Laboratory values, such as umbilical cord blood gas values, fetal scalp pH, and fetal SpO_2 values
- Neonatal outcomes and adverse effects
- Maternal outcomes, such as rates of cesarean deliveries for persistent non-reassuring heart rate tracing during labor

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Additional descriptions of literature search strategies are not available.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline draft, discussion, and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member medical groups during an eight-week period of "Critical Review."

Each of the Institute's participating medical groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Clinical Systems Improvement (ICSI) in collaboration with participating medical groups following general implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group: Second Draft

Following the completion of the "Critical Review" period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised as necessary and a written response is prepared to address each of the suggestions received from medical groups. Two members of the Ob/Gyn Steering Committee carefully review the Critical Review input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of two questions: (1) Have the concerns of the medical groups been adequately addressed? (2) Are the medical groups willing and able to implement the guideline? The committee then either approves the guideline for pilot testing as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Medical groups introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer and other practice systems. Evaluation and assessment occur throughout the pilot test phase, which usually lasts for three months. Comments and suggestions are solicited in the same manner as used during the "Critical Review" phase.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline, and the Ob/Gyn Steering Committee reviews the revised guideline and approves it for implementation.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations for the management of fetal heart rate in labor are presented in the form of an algorithm with 17 components, accompanied by detailed annotations. An algorithm is provided for Intrapartum Fetal Heart Rate Management. Clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are provided at the end of the "Major Recommendations" field.

Clinical Highlights

1. Assess patient's level of risk on presentation of active labor including but not limited to:
    - Oligohydramnios
    - Chronic and acute medical conditions of mother and/or fetus
    - Thick meconium

    (Annotation #2)

2. This guideline has implications for nursing staff (Annotation #3)
3. Consider amnioinfusion for thick meconium. (Annotation #4)
4. Assure fetal well-being with either intermittent auscultation or continuous electronic fetal heart rate monitoring. (Annotation #6)
5. Recognize and manage the following fetal heart rate patterns:
    - Late decelerations, variable decelerations, prolonged deceleration
    - Severe tachycardia and severe bradycardia
    - A sinusoidal pattern

    (Annotation #7)

6. When necessary initiate remedial techniques such as maternal position, intravenous fluid bolus and infusion, oxygen administration, discontinuing oxytocics, amnioinfusion, and subcutaneous terbutaline. (Annotation #9)
7. Use most clinically appropriate delivery methods for persistent non-reassuring fetal heart rate patterns. (Annotation #15)

Intrapartum Fetal Heart Rate Management Algorithm Annotations

1. Assess Labor Risk

Risk assessment should be performed on all patients in active labor and is the responsibility of all members of the health care team, including, but not limited to, nurses, midwives, and physicians.

Patient is in active labor. (See the National Guideline Clearinghouse summary for the related Institute for Clinical Systems Improvement [ICSI] guideline Prevention, Diagnosis and Treatment of Failure to Progress in Obstetrical Labor for specific definitions.)

Initial assessments on entry into labor and delivery area:

- 20-minute fetal heart rate (FHR) assessment
- patient assessment
- prenatal risk review
- risk in labor assessment

2. Labor at Risk?

High-risk situations may include the following conditions:

- abnormal fetal heart rate
- bleeding
- breech presentation
- dysfunctional labor
- fetal congenital heart disease
- intrauterine growth retardation
- maternal congenital heart disease
- maternal diabetes or gestational diabetes
- maternal hypertension
- maternal lupus
- multiple gestation
- oligohydramnios
- other serious chronic and acute medical conditions of mother and/or fetus
- oxytocin use
- post date pregnancy (≥42 weeks, per physician discretion)
- preterm labor (≤36 weeks)
- thick meconium
- others

Evidence supporting this recommendation is of classes: A, M

3. Consider Amnioinfusion for Meconium Treatment and/or Oligohydramnios

Amnioinfusion should be considered for thick meconium and/or oligohydramnios.

When amnioinfusion is utilized, continuous intrauterine pressure monitoring and also monitoring/documentation of the total infused volume should be performed. This may require placement of a second intrauterine pressure catheter.

Evidence supporting this recommendation is of classes: A, C, M

4. Nurse Auscultory Monitoring or Continuous Electronic Fetal Monitoring (EFM) - External (Ext)

   Nurse auscultory monitoring consists of auscultating with a DeLee stethoscope or a Doppler ultrasound device during a contraction and for 30 seconds after the contraction every 15 minutes during active stage of labor and every 5 minutes during second stage of labor.

   Evidence supporting this recommendation is of classes: A, C, R

5. Continuous Electronic Fetal Monitoring - External or Electronic Fetal Monitoring - Internal (if Needed)

   Electronic fetal monitoring (EFM) is indicated in all high risk situations and in low risk situations when the auscultatory pattern is unclear or when 1:1 nursing staff is not available. Internal EFM may allow easier patient positioning and promote patient activity by being less confining than external EFM. Low risk patients should be encouraged to be as active and mobile as possible.

6. Pattern Is Clear and Reassuring Tracing?

   When nurse auscultory monitoring yields an unclear fetal heart rate pattern, EFM is indicated. If the pattern remains unclear or if there are signs of persistent non-reassuring tracing, then internal EFM may be necessary. If there is any question regarding possible decelerations on auscultation, do external fetal monitoring. If inconsistent tracing, do internal fetal monitoring.

8. Remedial Techniques

   Remedial techniques attempt to change the relationship of the uterus, placenta, cord, and fetus to improve placental and fetal oxygenation. These are empirically designed to overcome uteroplacental insufficiency or to decrease cord compromise. Remedial techniques include the following:

   - amnioinfusion (Indications for therapeutic amnioinfusion include thick meconium, repetitive severe variable decelerations, and prolonged decelerations.)
   - changing maternal position to right/left side lying recumbent or knee-chest
   - intravenous (IV) infusion
   - mask oxygen
   - stopping oxytocics
   - subcutaneous terbutaline

   Evidence supporting this recommendation is of classes: A, D

10. Reassuring Fetal Heart Rate (FHR) Pattern Now?

All obstetrical nurses, nurse midwives, and physicians must achieve competence and confidence in fetal heart rate (FHR) monitoring and FHR pattern analysis. The following patterns must be recognized and managed appropriately:

- Late decelerations are a symmetrical fall in FHR beginning at or after the peak of the uterine contraction and returning to baseline only after the contraction has ended. They indicate possible uteroplacental insufficiency and they imply some degree of fetal hypoxia. Repetitive late decelerations and late decelerations with decreased baseline variability are non-reassuring.
- Variable decelerations are an acute fall in the FHR with a rapid down slope and variable recovery phase. It may or may not have a constant relationship to the uterine contraction pattern. Variable decelerations are non-reassuring when the FHR drops to less than 70 beats per minute (bpm), persists for at least 60 seconds from the beginning to the end of the variable deceleration, and is repetitive. The pattern of variable deceleration consistently related to the contractions with a slow return to FHR baseline is also non-reassuring.
- Severe tachycardia is a FHR greater than 180 beats per minute. Fetal tachycardia may be a sign of persistent non-reassuring tracing when it lasts longer than 10 minutes and is associated with decreased variability.
- Severe bradycardia is a FHR less than 80 beats per minute. Severe bradycardia lasting longer than 3 minutes is an ominous finding and may be associated with fetal acidosis.
- A sinusoidal pattern of regular oscillation of the baseline long-term variability with absent short-term variability is an ominous sign that may indicate fetal compromise.
- Moderate bradycardia between 80 to 100 beats per minute is often associated with fetal head compression. Delivery is not required unless other non-reassuring patterns, such as progressively decreasing short-term variability, are present.
- Prolonged deceleration is an isolated abrupt decrease in the FHR to levels below the baseline that last for at least 60 to 90 seconds. The decreases can be caused by any mechanism that leads to fetal hypoxia.
- Mild tachycardia is a FHR between 160 to 180 beats per minute. Delivery is not required unless other non-reassuring patterns, such as progressively decreasing short-term variability, are present.

If the FHR pattern remains reassuring then delivery type depends on other clinical factors.

Evidence supporting this recommendation is of classes: D, R

13. Delivery

Persistent non-reassuring tracings indicate the need for emergent delivery:

- Delivery should be effected by appropriate means depending on the clinical situation. This may include vacuum extraction, forceps, or

cesarean delivery, depending upon fetal presentation and the expertise of the attending physician(s).

- Cesarean delivery indications include:
  - persistent late decelerations
  - severe persistent variable decelerations
  - severe persistent non-remediable bradycardia
  - scalp pH <7.2

  If a cesarean delivery is performed, the suitability of a vaginal birth after cesarean in a subsequent pregnancy should be discussed with the patient.

Note: If 1 minute APGAR <3 or 5 minute APGAR <6, cord pH or gases are recommended.

Evidence supporting this recommendation is of class: D

14. Vibroacoustic Test or Scalp Stimulation Reassuring?

Obtain obstetrical or surgical consultation or referral where needed to plan for operative delivery if there are any non-reassuring FHR patterns present. Consider contacting a neonatology team to plan for possible neonatal intervention.

Reassuring results: 15 beats per minute increase for 15 seconds from beginning to end of acceleration in response to scalp stimulation or to vibration or sound. Fetal scalp blood sampling for pH may be used to assess a non-reassuring FHR pattern.

Evidence supporting this recommendation is of classes: D, M

15. Further Fetal Assessment Reassuring?

Scalp pH or other fetal assessment may be performed according to each medical group's established practice. Fetal pulse oximetry is an emerging technology whose benefit is yet unproven. (Conclusion Grade III: See Discussion Appendix A, Conclusion Grading Worksheet - Annotation #15 [Further Fetal Assessment Reassuring] in the original guideline document.)

Evidence supporting this recommendation is of classes: A, C, D, X

17. Expedited Vaginal Delivery

This may include:

- episiotomy, and/or
- forceps delivery, and/or
- improved maternal expulsion efforts, and/or
- vacuum extraction

Definitions:

Conclusion Grades

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

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Classes of Research Reports

A. Primary Reports of New Data Collection

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for Intrapartum Fetal Heart Rate Management.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The guideline contains an annotated bibliography and discussion of the evidence supporting each recommendation. The type of supporting evidence is classified for selected recommendations (see "Major Recommendations.")

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate medical management of intrapartum fetal heart rates
- Reduced adverse neonatal and/or maternal outcomes (e.g., morbidity and mortality)

Subgroup(s) Most Likely to Benefit

Women whose labor presents a high risk for development of abnormal fetal heart rate including the following conditions:

- abnormal fetal heart rate
- bleeding
- breech presentation
- dysfunctional labor
- fetal congenital heart disease
- intrauterine growth retardation
- maternal congenital heart disease
- maternal diabetes or gestational diabetes
- maternal hypertension
- maternal lupus
- multiple gestation
- oligohydramnios
- other serious chronic and acute medical conditions of mother and/or fetus
- oxytocin use
- post date pregnancy (≥42 weeks, per physician discretion)
- preterm labor (≤36 weeks)
- thick meconium
- others

POTENTIAL HARMS

Amnioinfusion

The onset of the beneficial effects of amnioinfusion requires at least 20 to 30 minutes, so care should be taken when performing amnioinfusion to avoid delaying surgical intervention if there is no improvement in a significantly abnormal fetal heart rate.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situations and any specific medical questions.
- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- The recommendations in this guideline are supported by large controlled studies. The guideline work group would prefer to refer to double-blind studies, but it is not feasible to blind a woman to whether she is having labor or delivery. It is unsafe to blind care providers to whether persistent non-reassuring heart rate tracings have occurred. Given these limitations, the work group feels confident of the literature support for the recommendations within this guideline.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented in the original guideline document to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

RELATED NQMC MEASURES

- Intrapartum fetal heart rate management: percentage of women who are assessed for risk status on entry to labor and delivery.
- Intrapartum fetal heart rate management: percentage of births with amnioinfusion when either of the following is present: thick meconium or repetitive severe variable decelerations or oligohydramnios.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Intrapartum fetal heart rate management. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Oct. 27 p. [45 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1994 Sep (revised 2003 Oct)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT SpecialtyCare, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, RiverWay Clinics, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians

ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; e-mail: icsi.info@icsi.org; Web site: www.icsi.org.

SOURCE(S) OF FUNDING

The following Minnesota health plans provide direct financial support: Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, Metropolitan Health Plan, PreferredOne, and UCare Minnesota. In-kind support is provided by the Institute for Clinical Systems Improvement's (ICSI) members.

GUIDELINE COMMITTEE

Ob/Gyn Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: John Jefferies, MD (Work Group Leader) (Mayo Clinic) (Obstetrics/Gynecology); Lori Bates, MD (Mayo Clinic) (Family Practice); Brendon Cullinan, MD (Montevideo Clinic) (Family Practice); Mark Matthias, MD (Hutchinson Medical Center) (Family Practice); Dale Akkerman, MD (Park Nicollet Health Services) (Obstetrics/Gynecology); Lisa Mattson, MD (Park Nicollet Health Services) (Obstetrics/Gynecology); Cherida McCall, CNM (HealthPartners Medical Group) (Nurse Midwife); Dianne Eggen, RN, MPH (HealthPartners) (Health Education); Rick Carlson, MS (HealthPartners) (Measurement Advisor); Nancy Jaeckels (Institute for Clinical Systems Improvement) (Implementation Advisor); Nancy Greer, PhD (Institute for Clinical Systems Improvement) (Evidence Analyst); Barbara Mullikin, MS, (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, the Institute for Clinical Systems Improvement (ICSI) has adopted a policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform users. Readers of the guideline may assume that only work group members listed have potential conflicts of interest to disclose.

No work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's Web site.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Intrapartum fetal heart rate management. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2002 Oct. 28 p.

The next scheduled revision will occur within 18 months.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Intrapartum fetal heart rate management. In: ICSI pocket guidelines. April 2003 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2003 Mar. p. 144-6.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on July 10, 2000. The information was verified by the guideline developer on April 25, 2001. This summary was updated by ECRI on January 8, 2002, February 25, 2003, and most recently on January 7, 2004.

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Date Modified: 11/8/2004


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